

Math 113(2) - Comments for HW4

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Some general comments:

1. **DO NOT CHEAT!**
2. Please use staplers or clips, not just fold the left-upper corner of papers!
3. Try to write well! - maybe this will be harder than the first one...
4. If you can, try to use \LaTeX .
5. For questions that requires proofs, I almost not give any partial credits.

Section 6, Problem 48

Most of students use the following argument: if G has a finite number of subgroups, then it has a finite number of cyclic subgroups, and nothing can be isomorphic to \mathbb{Z} , since \mathbb{Z} has infinitely many subgroups. Since $G = \cup_{i=1}^n \langle a_i \rangle$ is a finite union of finite cyclic groups, so is finite.

For such argument, you should check that $G = \cup_{i=1}^n \langle a_i \rangle$ holds. (Just pick any element $x \in X$, then $\langle x \rangle$ should be coincide with some $\langle a_i \rangle$ by the assumption. The other direction is clear.) I gave full credits for these, but you should mention it.

Also, not every infinite group is isomorphic to \mathbb{Z} . (If it is, we don't have to spend much time to study groups!) You may get only 3 points if you assume that G is infinite and cyclic, so is \mathbb{Z} .

It is not true that $x \neq y$ implies $\langle x \rangle \neq \langle y \rangle$. If you use such argument in your proof, you can only get 5 points.

Section 7, Problem 4

If you answer is correct, I gave full credits. But you have to know why it is the answer. For example, $\gcd(12, 30, 36) = 6$.

Section 7, Problem 7b

If you give some explanation but the answer is wrong, I gave 8 points (if you were going the right direction). If you only give a wrong answer without any explanation, I didn't give any credits.